

L 06228-67

ACC NR: AP6029415

4 figures and 1 table.

SUB CODE: 07/ SUBM DATE: 13Dec65/ ORIG REF: 008/ OTH REF: 007

Card 2/2 *tdh*

ACC NR: AP7008667

SOURCE CODE: UR/0153/66/009/006/0938/0942

AUTHOR: Dronova, G. N.; Yevstrop'yev, K. S.

ORG: Department of Glass Technology, Leningrad Technological Institute im. Lensovet (Kafedra tekhnologii stekla, Leningradskiy tekhnologicheskii institut)

TITLE: Dielectric parameters of anisotropic fiberglass-reinforced plastics containing epoxy-phenol binders

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 6, 1966, 938-942

TOPIC TAGS: fiberglass, reinforced plastic, epoxy resin, resistivity, dielectric constant, dielectric loss

ABSTRACT: The resistivity ρ_v , dielectric loss $\tan \delta$ and permittivity ϵ of type SVAM fiberglass-reinforced materials at 50 cycles were measured on flat specimens 25x25x2 mm with an R-525 high-voltage bridge. At 10^3 and 10^4 cycles, $\tan \delta$ and ϵ were measured on an MLXo-1 instrument, and at 10^5 , 10^6 and 10^7 cycles with a KV-1 Q-meter. To determine the influence of the properties of the components on the dielectric characteristics, the quantities ρ_v , $\tan \delta$ and ϵ at 10^6 cycles of standard alkali-free glass, ED-6 epoxy resin (cured with K-17 phenol formaldehyde resin) and an SVAM material consisting of this glass and resin were measured. It was found that the dielectric characteristics of the SVAM material were determined by the properties of both components and that a decisive part is played by the binder. ρ_v , $\tan \delta$ and ϵ of the reinforced

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UDC: 621.375.616.9.001.8

ACC NR: AP7008667

material can be calculated from ρ_v , $\tan \delta$ and ϵ of the components. There is a distinct quantitative influence of air inclusions on ϵ in the SVAM material studied. As the temperature rises, $\tan \delta$ and ϵ of SVAM increase at 10^3 - 10^7 cycles, so that their insulating properties decrease. The insulating properties of SVAM are impaired in a moist atmosphere; however, following the action of moisture, it is equivalent to fiberglass-reinforced plastics used for electric insulation. Orig. art. has: 5 figures and 2 tables.

SUB CODE: 11/ *20/* SUEM DATE: 30Mar65/ ORIG REF: 003

Card 2/2

YEVSTROP'YEV, K.S.; MEDVEDEV, N.M. [deceased]; KHALILEV, V.D.

Effect of gaseous atmosphere during fluoberyllate glass melting
on its transparency in the ultraviolet. Izv. AN SSSR. Neorg.
mat 1 no.11:1978-1981 N '65. (MIRA 18:12)

1. Institut khimii silikatov imeni I.V. Grebenshchikova i
Leningradskiy tekhnologicheskii institut imeni Lensovet.
Submitted April 10, 1965.

L 46987-66 EWP(k)/EWT(m)/EWP(t)/ETI IJP(c) JH/JD
AEC NR: AT6024910 (A, N) SOURCE CODE: UR/2981/66/000/004/0026/0031.

AUTHOR: Grushko, O. Ye.; Zal'tsman, I. Ya.; Vinokurov, N. D.; Semenov, A. Ye.;
Zasyarkin, V. A.; Kryukov, M. A.; Yovstyugin, A. P.; Bozhenok, I. V.

40
B+1

ORG: none

TITLE: Process of casting VAD23-alloy ingots

SOURCE: Alyuminiyevyye splavy, no. 4, 1966. Zharoproschnyye i vysokoproschnyye splavy
(Heat resistant and high-strength alloys), 26-31

TOPIC TAGS: metal casting, lithium containing alloy, aluminum alloy, copper containing
alloy/VAD23 aluminum alloy

ABSTRACT: In elaborating a process for casting ingots from VAD23 alloy by the contin-
uous method, the authors studied the casting properties (tendency to form hot and cold
cracks) of this alloy, established the temperature conditions of the casting, and de-
termined the methods of protecting the metal during transit from the mixer to the crys-
tallizer and in the crystallizer. The chemical activity of lithium, which enters into
the composition of the alloy, made it necessary to protect the alloy surface during
transit. Two methods were tested for this purpose, involving the use of (1) sulfur di-
oxide and (2) a flux consisting of a eutectic mixture of lithium and potassium chlor-
ides. Only the latter method gave satisfactory results. A temperature of 700-730°C
was found to be optimal for casting. The quality of the ingots obtained was thoroughly

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1. 46987-66

ACC NR: AT6024910

checked by analyzing the structure of fractures, microstructure, density, liquation, and mechanical properties along the length and cross section of the ingot in the longitudinal and trasverse directions. The elaborated casting process, which includes protection of the metal with a liquid flux on the path from the mixer to the crystallizer, produced good-quality ingots. Orig. art. has: 3 figures and 1 table.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002

rw
Card 2/2

L 16988-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JT
 ACC NR: AT6024909 (A, N) SOURCE CODE: UR/2981/66/000/004/0021/0025

AUTHOR: Zal'tsman, I. Ya.; Grushko, O. Ye.; Semenov, A. Ye.; Zasyphin, V. A.;
 Vinokurov, N. D.; Kryukov, M. A.; Yevstyugin, A. P.; Bozhenok, I. V.

ORG: none

TITLE: Some aspects of the preparation of VAD23 alloy

SOURCE: Alyuminiyevyye splavy, no. 4, 1966. Zharoprochnyye i vysokoprochnyye splavy
 (Heat resistant and high-strength alloys), 21-25

TOPIC TAGS: aluminum alloy, copper containing alloy, lithium containing alloy, manga-
 nese containing alloy, cadmium containing alloy / VAD23 alloy

ABSTRACT: VAD23 alloy belongs to alloys of the $Al-Cu-Li$ system with small admixtures
 of Mn and Cd. Because of the loss of lithium from the melt during the preparation of
 this alloy, the introduction of lithium (and cadmium) was carried out under a special
 flux consisting of a eutectic mixture of lithium and potassium chlorides. This flux
 was found to prevent the loss of lithium to a considerable extent; however, as the
 lithium content of the alloy increases, this protection becomes less effective. Partic-
 ular attention must be paid to the quality of preparation of the flux and to the manner
 in which lithium is introduced into the melt (without disturbing the flux). The flux
 has the disadvantage of being hygroscopic because of the LiCl present in its composi-
 tion, and therefore must be used only in the liquid or freshly-remelted state, the

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L 46988-66

ACC NR: AT6024909

2

liquid state being preferred. Refining of the alloy with gaseous chlorine after the addition of lithium insures the required purity of the ingots. Orig. art. has: 3 figures and 1 table.

SUB CODE: 11/ SUM DATE: none/ ORIG REF: 001/ OTH REF: 001

Card 2/2

ALEKSEYEV, A. (Cheboksary); YEVSTYUGIN, N., instruktor; TIKHIY, M. (g. Zaporozh'ya).; GULEV, P. (g. Maykop)

In the trade-union organizations. Sov. profsoiuzy 6 no. 16:79-80 N '58. (MIRA 12:2)

1. Starshiy instruktor Chuvashskogo oblastnogo soveta profsoyuzov (for Alekseyev). 2. Sverdlovskiy oblastnoy sovet profsoyuzov (for Yevstyugin).

(Trade unions)

YEVSTYUGIN, N. (Sverdlovsk)

All workers are trade-union members. Sov. profsoiuzy 7 no.13:52-53
Jl '59. (MIRA 12:10)

(Sverdlovsk--Trade unions)

MYL'NIKOVA, A.; YEVSTYUGIN, N.; SAGUN, Ya.

Letters to the editors. Sov.profsoiuzy 16 no.13:28-49 JI '60.
(MIRA 13:8)

1. Predsedatel' kul'turno-massovoy komissii zavkoma zavoda
"Krasnoye Sormovo" (for Myl'nikova). 2. Instruktor Sverdlovskogo
oblastnogo soveta profsoyuzov (for Yevstyugin). 3. Sekretar'
dorozhnogo komiteta professional'nogo soyuza rabotnikov zhelez-
nodorozhnogo transporta Yuzhnoy zheleznoy dorogi (for Sagun).
(Trade unions)

AFANAS'YEV, Ya. (g.L'vov); TKACH, M., instruktor; KACHAN, L.;
SHMYGANOVSKIY, V.; VOLKOV, A.; FRID, L. (g.Minsk); PODLUZHNIY, A.
(g.Kiyev); YEVSTYUGIN, N.

Letters and correspondence. Sov. profsoiuzy 17 no.24:42-43 D '61.
(MIRA 14:12)

1. Krivorozhskiy gorodskoy komitet Kommunisticheskoy partii
Ukrainy (for Tkach). 2. Neshtatnyy korrespondent zhurnala
"Sovetskiye profsoyuzy" g. Vitebsk (for Kachan). 3. Predsedatel'
rabochego komiteta sovkhoza "Cherevkovskiy" Krasnoborskogo rayona,
Arkhangel'skoy obl. (for Volkov). 4. Neshtatnyy korrespondent
zhurnala "Sovetskiye profsoyuzy", Sverdlovskaya obl. (for
Yevstyugin).

(Community centers)
(Evening and continuation schools)

YEVSTYUGIN, V.

From decisions to work. Okhr. truda i zots.strakh. 3 no. 10:46-
47 0 '60. (MIRA 13:11)

1. Instruktor Sverdlovskogo oblsoprofa, Sverdlovsk.
(Sverdlovsk--Steel industry--Hygienic aspects)

YEVSTYUGOV, A., inzh.; MAYLENOV, K., inzh.

Mechanized bench for making cement-sand tiles. Sel'.stroil. 15
no.5:14-15 № '60. (MIRA 13:8)
(Tiles) (Automatic control)

YEVSTYUGOV, A., inzh.

When a builder's honor has been lost. Sel'.stroï. 15 no. 12:9
D '60. (MIRA 13:12)

(Bashkiria—Farm buildings)

YEVSTYUGOV, A.

Building Trades

Schools of the Chief Administration of Rural
Construction. Sel'. strol No. 4, 1952

Monthly List of Russian Accessions, Library of Congress November 1952. UNCLASSIFIED

YEVDYUGOV, A.

YEVDYUGOV, A., inzhener

Making limestone wall blocks for rural with a vibrogrinder construction
Sel'.stoi. 10 no.7:16-18 J1'55. (MIRA 8:10)
(Concrete blocks)

MARTYNOV, P.T.; YEVSTYUGOV, A.I., nauchnyy redaktor; GURVICH, E.A., redaktor;
LYUDKOVSKAYA, N.I., tekhnicheskikh nauk

[Manufacture of concrete wall blocks on collective farms; workers' manual] Proizvodstvo stenovykh betonnykh kamnei v kolkhozakh; posobie dlia podgotovki rabochikh. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 75 p. (MIRA 9:12)
(Concrete blocks)

YEVSTYUGOV, Aleksandr Ivanovich, inzhener; BIRENGOF, A.M., spetsredaktor;
VEOL'FOVSKAYA, D.N., redaktor; SOKOLOVA, H.N., tekhnicheskii redaktor;
PERESYPKINA, Z.D., tekhnicheskii redaktor

[Collective farm construction brigade] Kolkhosnaia stroitel'naya
brigada. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 271 p.
(MIRA 10:1)

1. Glavkolkhoztroy Ministerstva gorodskogo i sel'skogo stroitel'stva
RSFSR (for Yevstyugov)
(Collective farms) (Construction industry)

BOGATYKH, Ya.D.; GALAKTIONOV, A.A.; DZIKAN, V.A.; YEVSTYUGOV, A.I.;
KOZLOVSKIY, A.S.; MARTYNOV, P.T.; DUBROVSKIY, V.A., red.; FEDOTOVA,
A.F., tekhn. red.

[Collective farm builder] Stroitel' v kolkhoze. Moskva, Gos. izd-vo
sel'khoz. lit-ry, 1958. 502 p. (MIRA 11:12)
(Building)

YEVSYUGOV, A. inzh.

Introduce precast reinforced concrete in rural construction. Sel'.
stroil. 12 no.1:17 Ja '58. (MIRA 11:2)
(Farm buildings) (Precast concrete construction)

YEVSTUGOV, A.

Tel'nya interfarm building organization. Sel'.strof. 13
no.11:8 N '58. (MIRA 11:12)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela Glavkolkhozstroya
Ministerstva sel'skogo khozyaystva RSFSR.
(Tel'nya District--Building)

YEVSTYUGOV, A., inzh.

How to read drawings and build using standard plans. Sel'.stoi.
14 no.5:23-25 Ky '59. (MIRA 12:8)
(Architecture--Designs and plans)

YEVSTYUGOV, A., inzh.

The SM-296B high-capacity brickmaking machine. Sel'.stroï. 13 no.2:
11-12 F '59. (MIRA 12:3)
(Brickmaking machinery)

BOGATYKH, Ya.D.; GALAKTIONOV, A.A.; DZIKAN, V.A.; YEYSTYUGOV, A.I.;
KOZLOVSKIY, A.S.; MAREYNOV, P.T.; BARNIKOV, S.A., red.; PRO-
KOP'YEVA, L.N., tekhn. red.

[Textbook for training agricultural construction workers]
Posobie po podgotovke rabochikh-stroitelei v sel'skom kho-
ziaistve. Moskva, Gos.izd-vo sel'khoz. lit-ry, 1961. 638 p.
(MIRA 14:5)

(Building trades)

YEVSTYUGOV, A., inzh.

New conditions for paying bonuses to builders. Sel'. stroi. 15
no.4: insert: 4 Ap '61. (MIRA 14:6)
(Bonus system)

YEVSTYUGOV, A.

Compiling estimates for construction. Sel'. stroi. 16 no.6;
insert:1-5 Je '61. (MIRA 14:7)

1. Glavnyy spetsialist po stroitel'stvu v kolkhozakh Gosplana
RSFSR.

(Building—Estimates)

YEVSTYUGOV, Aleksandr Ivanovich; RAZINKOV, P., red.; POKHLEBKINA, M.,
tekh. red.

[Advice for rural carpenters] Sovety sel'skomu plotniku. Mo-
skva, Mosk.rabochii, 1961. 123 p. (MIRA 15:1)
(Carpentry--Handbooks, manuals, etc.)

YEVSTYUGOV, Aleksandr Ivanovich; MASHIN, Andrey Ivanovich;
SOL'YAKOV, Rima Timofeyevich; RAZINKOV, P., red.

[Manual for rural builders] Spravochnik sel'skogo
stroitelia. Moskva, Mosk. rabochii, 1964. 279 p.
(MIRA 17:9)

YEVSTYUGOV, Aleksandr Ivanovich, inzh.; POKROVSKIY, Aleksandr
Il'ich, inzh.; KREYNDLIN, L.N., nauchn. red.; STAROSVETOVA,
V.G., red.

[Woodworking operations] Plotnichnye raboty. Moskva, Vysshaya
shkola, 1965. 300 p. (MIRA 18:4)

YEVSTYUGOV, L.M., inzhener; KRAKOVSKIY, N.I., professor; KHODIYEV, E.M.

Plastic surgery for major defects of the large arteries with homografts freeze-dried in vacuum apparatus. Vest.khir. 75 no.3:46-51 (MLRA 8:7)
Ap '55.

1. Iz Instituta khirurgii im. A.V.Vishnevskogo AMN SSSR (dir.-prof. A.A.Vishnevskiy) i iz Instituta vaktsin i syvorotok im. I.I.Machnikova Ministerstva zdravookhraneniya SSSR (dir.-doktor med.nauk M.I.Sokolov). Adres N.I.Krakovskogo: Moskva, B 4-A, 4 Dobryninskiy per., d. 8/10, kv. 60.

(BLOOD VESSELS, transplantation,
freeze-dried homografts)

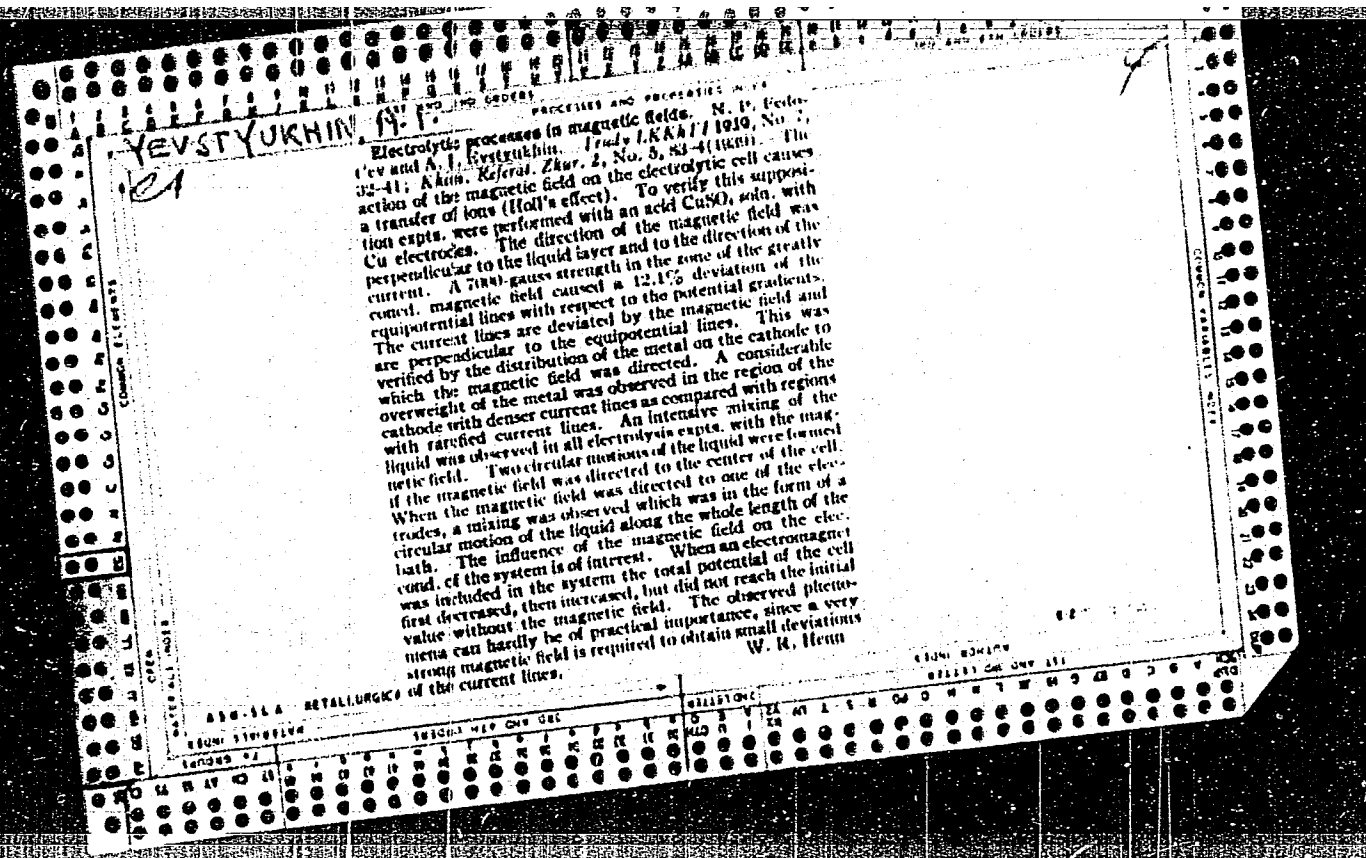
(TRANSPLANTATION,
blood vessels, freeze-dried homografts)

B10

RADZIKHOVSKIY, B.L., prof.; VODOVOZOV, A.M., kand.med.nauk; YEVSTYUGOV, L.M.,
inzh.

Transplantation of a cornea frozen and dried in a vacuum apparatus.
Oft.zhur. 1/4 no.8:485-488 '59. (MIRA 13:4)

1. Iz kliniki glaznykh bolezney (sveduyushchiy - prof. B.L. Radzi-
khovskiy) Chernovitskogo meditsinskogo instituta.
(CORNEA--TRANSPLANTATION)



YEVSTYUKHIN, B. I.		PROCESSING AND PROPERTIES INDEX	
BC		B-I-6	
<p>Abstract of report in an advertisement. N. P. Fedatov and A. P. Evstuhin (J. Gen. Chem. Russ. 1962, 32, 12-13). A method is described for determining the equilibrium rate and time of rate between two electrodes immersed in a solution. This method is shown to be more accurate than methods currently in use based on the use of the standard half-cell, using near-HCl solution as anode. It is noted that increased cathodic current leads to a decrease in the rate of increase in the distance between the two electrodes. The effects of anode polarization are discussed, and it is suggested that the results may be of value in choosing the right conditions for plating objects with surfaces in heavy relief.</p> <p>J. L. W.</p>			
<p>ABSTRACT METEOROLOGICAL LITERATURE CLASSIFICATION</p> <p>12000 LITERATURE</p> <p>12000 LITERATURE</p> <p>12000 LITERATURE</p>			

YEVSTYUKHIN, A. I. and BYSTROV, P. D.

"A study of the phase diagram of the system NaF-ThF₄ over the concentration range 0 to 35 mol % ThF₄. Report of the MIFI, 1949 (unpublished).

SO: J. Nuclear Energy, II, 1957, Vol. 5, p. 114, Pergamon Press Ltd., London

YEVSTYUKHIN, A. I. and ABANIN, D. D.

"A study of the phase diagram of the system $\text{NaF}-\text{ThF}_4$ over the concentration range 35 to 100 mole % ThF_4 . Report of the MIFI, 1950 (unpublished).

SO: J. Nuclear Energy, IX, 1957, Vol. 5, p. 114, Pergamon Press Ltd., London

YEVSTYUKHIN, A. I. and MALADIN, S. G.

"A Study of the phase Diagram of the system $KF-ThF_4$ over the concentration range 0 to 37 mole % ThF_4 . Report of the MIFI, 1951 (unpublished).
SO: J. Nuclear, Energy, II, 1957, Vol. 5, p. 114, Pergamon Press Ltd., London

YEVSTYUKHIN, A. I. and GODIN, YU. G.

"A study of the phase diagram of the system $KF-ThF_4$ over the concentration range 35 to 100 mole % ThF_4 . Report of the MIKI, 1952 (unpublished).
SO: J. Nuclear Energy, II, 1957, Vol. 5, p. 114, Pergamon Press Ltd., London

YEVSTYUKHIN, A. I. and BYSTROV, P. D.

"A study of the system NaF-KF-ThF_4 and the composition of the electrolyte during electrolysis of the chloride-fluoride system NaCl-KCl-ThF_4 . Report of the MIFI. 1953 (unpublished).

SO: J. Nuclear Energy, II, 1957, Vol. 5, p. 114, Pergamon Press Ltd., London

TEVSTYUKHIN, A.I., redaktor.

[Titanium and its alloys] Titan i ego splavy: sbornik perevodov.
Moskva, Izd-vo inostrannoi lit-ry, Upr. nauch. informatsii, 1953-
(MLRA 7:6)

(Titanium)

YEVSTYUKHIN, A. I. and V. N. KOKHANOVA

"A study of the Polythermal section of the system NaF-KF-TlF_4
along the line $\text{KThF}_5\text{-NaF}$. Report of the MIFI, 1953, (Unpublished).

SO: J. Nuclear Energy, II, 1957, Vol. 5, p. 114. Pergamon Press Ltd., London

YEVSTYUKHIN, A. I.

YEVSTYUKHIN, A.I., redaktor; RUSAKOV, A.A., redaktor.

[Titanium and its alloys; a collection of translations] Titan i
ego splavy. Sbornik perevodov. Moskva. Izd-vo inostrannoi lit-ry,
Vol. 2. 1954. 209 p.
(Titanium) (MLRA 7:7)

YEVSTYUKHIN, A.I.

CARD 1 / 2

PA - 1604

SUBJECT USSR / PHYSICS
AUTHOR EMEL'YANOV, V.S., BYSTROV, P.D., YEVSTYUKHIN, A.I.
TITLE An Investigation of the Iodide Method of Refining Zirkonium.
PERIODICAL Atomnaja Energija, 1, fasc. 1, 43-51 (1956)
Issued: 3 / 1956

The present investigation served the purpose of explaining the principles of the process of refining as well as of problems of practical interests. Tests were carried out in small glass- and quartz vessels under

10^{-4} mm vacuum, in which glowing tungsten wires fastened by molybdenum holders were used as separators. Temperature was measured by means of pyrometers. Besides contradictory statements made in literature concerning the influence exercised by the temperature of the wire on the course taken by reaction, a considerable dependence was found to exist within the range of operation of from 1200 to 1500° C. In contrast to statements made by other authors, who believe in a slight increase of dissociation constants within the range above 1450° C, it is assumed that ZrJ_4 -partial pressure near the wire cannot increase infinitely because the partial pressures satisfy the equation $P_J - P_{ZrJ_4} = P_{total}$.

The influence exercised by the quantity of iodide on reaction velocity: In the case of small quantities, 3 - 5 mg/50 g Zr, reaction is very short, apparently because of the formation of low iodides. The curve shows a distinct maximum at 12 mg/1000 cm³ vessel volume.

Atomnaja Energija, 1, fasc. 1, 43-51 (1956) CARD 2 / 2 PA - 1604
 For the dependence of the precipitation velocity on vessel temperature (and thus on the temperature of the metal) different authors give different data. It was found that, on the assumption that the temperature of the ZrJ_4 is constant, and assuming an optimum steam pressure, the temperature of the vessel can vary between 235 and 700° C without reaction velocity being influenced.

In the course of the investigation of the problem as to the existence of a second maximum above 420° C the following two cases were distinguished:
 1. If Zr is fine, i.e. if its surface is large, low iodides will form, and at higher temperatures tetraiodide will be formed which leads to a 2. maximum.
 2. In the case of small quantities of the metal in large pieces, there will always be a surplus of ZrJ_4 which determines the vapor pressure and thus the reaction velocity, the optimum of which is at about 235-240° C.
 This hypothesis was confirmed by a further experiment in the course of which vapor pressure was measured in the vessel.

INSTITUTION:

YEVSTYUKHIN, A. I.

C.

USSR/ Inorganic Chemistry. Complex Compounds

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11437

Author : Yemel'yanov V.S., Bystrov P.D., Yevstyukhin A.I.

Title : Investigation of Iodide Method of Zirconium Refining. Communication 2.
Lower Zirconium Iodides and Effect of Tetraiodide Pressure on Rate of
Deposition of the Metal

Orig Pub : Atom. energiya, 1956, No 3, 122-131

Abstract : In continuation of previous work (Part 1, RZhKhim, 1956, 68069) an investigation was made of the influence of lower iodides (LI) and vapor pressure of ZrI_4 on the process rate of zirconium refining by the iodide method. Following refining LI are found on the surface of the raw metal in the form of black, black-brown, occasionally bluish-black bloom. The deposit approximates ZrI_3 in composition at reaction flask temperatures of 300-500°, and that of ZrI_2 at 620°. Combining of ZrI_4 at LI at the surface has as a final result, according to the authors, elimination of excess ZrI_4 on prolonged iodizing and consequently a decrease of its pressure in the reaction flask, which in turn changes the rate. The authors believe that other important factors which affect the rate of the

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USSR/ Inorganic Chemistry. Complex Compounds

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11437

process at pressures of $ZrI_4 > 0.2 - 0.3$ mm Hg., are inhibition of diffusion process of metal transfer, due to lowering of diffusion coefficient of gaseous phase components on increase in pressure, and formation of LI at surface of incandescent Zr rod.

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PA - 1519

CARD 1 / 2

YEVSTYUKHIN, A.I.

SUBJECT
AUTHOR
TITLE

USSR / PHYSICS
EMEL'JANOV, V.S., YVSTJUCHIN, A.I.
The Investigation of Systems of Fused Salts on the Basis of
Thorium Fluoride. Note I: Investigation of the System
ThF₄ - NaCl - KCl.

PERIODICAL
Atomnaja Energija, 1, fasc. 4, 107-112 (1956)
Issued: 19.10.1956

The system NaCl - KCl - ThF₄ and the systems NaCl - ThF₄ and KCl - ThF₄ therein contained are of importance for the selection of the electrolyte on the occasion of the winning of thorium by means of electrolysis. The main method employed by the authors for the investigation of these state diagrams was the thermal analysis (with automatic recording of the simple and differentiated curves) of the fused salts. As an auxiliary method they chose phase analysis by the direct comparison of the X-ray pictures obtained with those of pure raw materials: ThF₄, NaCl and KCl. Furthermore, microstructure analyses of the microsection surfaces of these salt alloys were carried out. Production and properties of the material examined are described. There follows the discussion of the investigation of the systems NaCl - ThF₄ and KCl - ThF₄.

Conclusions: The state diagram found here of the system NaCl - ThF₄ belongs to the diagrams of eutectic type with lacking displaceability of components in the solid state. The eutecticum is at 23 molecular percents ThF₄ and 712° C.

IN

YEVSTYUKHIN, A.I. YEVSTYUKHIN, A.I.
CARD 1 / 2

LA - 1756

SUBJECT

USSR / PHYSICS

AUTHOR

EMEL'JANOV, V.S., EVSTYUCHIN, A.I.

TITLE

The Investigation of Systems of Molten Salts on the Basis of Thorium Fluoride.

PERIODICAL

Atomnaja Energija, 1, fasc.5, 80-85 (1956)
Issued: 1 / 1957

By means of thermographic, roentgenographic and other methods of analysis the state diagrams of the system NaF - ThF₄ with four chemical compounds (Na₄ThF₈; α-Na₂ThF₆, β-Na₂ThF₆, NaThF₅, NaTh₂F₉) and of the system Kf-ThF₄ with 6 chemical compounds (K₅ThF₉), K₃ThF₇, K₃Th₂F₁₁, KThF₅, KTh₂F₉, KTh₆F₂₅) are constructed.

Investigation of the system NaF - KF - ThF₄ and of the therein contained systems NaF-ThF₄, KF-ThF₄ was carried out in connection with the study of a multicomponent electrolyte which is formed on the occasion of the continuous electrolysis of the salts NaCl-KCl-ThF₄ by the accumulation of NaF and Kf. Investigation was carried out by the methods of thermal-, roentgen-phase- and chemical analysis. As initial material chemically pure NaF, KF and ThF₄ was used. The system KF-ThF₄ contains the chemical compounds K₃ThF₇, KThF₅ and KTh₁₃F₁₃, which form 4 simple eutectic systems. Also the 6 chemical compounds contained in the system KF-ThF₄ are enumerated.

Investigation of the system NaF-ThF₄ was carried out on 35 alloys at intervals of from 2 to 2,5 Mol-percents of ThF₄ within the range of from 2 to 35 mol-per-

PA - 1756

Atonnaja Energija, 1, fasc.5, 80-85 (1956) CARD 2 / 2

cents and with intervals of 3,5 mol-percents within the range of from 35 to 100 mol-percents. In the system NaF-ThF₄ there are 4 chemical compounds: Na₄ThF₈, Na₂ThF₄, NaThF₅ and NaTh₂F₉. Na₂ThF₆ exists in two modifications.

Investigation of the system KF-ThF₄ was carried out on more than 40 melts with intervals of 2-3 mol-percents ThF₄. This system is very complicated, it has 6 chemical compounds which are enumerated together with their domains of existence.

The system NaF-KF-ThF₄: The domain NaF-Na₂ThF₆-KThF₅-KF, which is of interest in connection with the electrolytic winning of thorium, was investigated. On the data obtained on this occasion this domain was triangulated for 6 ternary systems. Investigation confirmed the existence of a new compound (phase X) of the composition NaK(ThF₆) with a noticeable homogeneity domain. A particularly important domain of solid solutions was noticed on the section NaKThF₆-K₃Th₂F₁₁.

The polythermal section of NaF-KThF₅. For the additional investigation of the compound KNaThF₆ a polythermal section of the system along the line NaF-KThF₅ was constructed. Results are shown in form of a diagram. At 665° C, NaKThF₆ decays after a peritectic reaction, and at 540° C it is subjected to a polymorphous transformation. The peritectic point on the horizontal of 655° C is about 63 mol-percents NaF. At 570° C and 31 mol-percents KThF₅ the eutecticum NaKThF₆ + NaF is found.

INSTITUTION:

YEVSTYUKHIN, A.I.

YEMEL'YANOV, V.S., red.; YEVSTYUKHIN, A.I., doktor tekhn.nauk, red.;
L'VOVA, N.M., red.; BELEVA, M.A., tekhn.red.

[Purification of metals; a collection of translations] Metody
polucheniia chistykh metallov; sbornik perevodov. Moskva, Izd-vo
inostr.lit-ry, 1957. 384 p. (MIRA 11:1)

1. Chlen-korrespondent AN SSSR (for Yemel'yanov).
(Metallurgy)

SOV/137-58-9-18827

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 95 (USSR)

AUTHORS: Yemel'yanov, V.S., Bystrov, P.D., Yevstyukhin, A.I.

TITLE: An Iodide Method of Refining Zirconium. A Contribution to the Problem of the Relationship of Rate of Deposition of the Metal to the Temperature of an Incandescent Zirconium Filament (Iodidnyy metod rafinirovaniya tsirkoniya. K voprosu o zavisi-mosti skorosti otlozheniya metalla ot temperatury raskalennoy tsirkoniyevoy niti)

PERIODICAL: V sb.: Nekotoryye vopr. inzh. fiz. Nr 2. Moscow, 1957, pp 15-23

ABSTRACT: Taking the hypothesis that processes of diffusion are decisive in the kinetics of the process of the transfer of Zr to a central filament (F), it is shown that the rate of deposition of the Zr on the F is directly proportional to the pressure of free I near the surface of the F, and that this in turn determines the temperature of the F. Inasmuch as the vapor pressure of the I around the F cannot exceed the total pressure in the apparatus, which is governed by the wall temperature, the rate of deposition of Zr on the F ceases to increase with a further rise in F

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SOV/137-58-9-18827

An Iodide Method of Refining Zirconium. (cont.)

temperature after the attainment of some specific F temperature which depends upon the total pressure in the apparatus. These concepts afford an explanation of the available experimental data of various authors on the dependence of the rate of Zr deposition upon an F on the temperature of that F. It is also shown that the quantity of Q_A introduced by Döring and Molière (J.H. Döring, K. Molière, Z. für Elektrochemie, 1952, Vol 56, Nr 4, p 403) in the equation $\log a = \text{const } Q_A/RT_D$, where a is the rate of Zr deposition and T_D , the temperature of the F, is related to ΔH in the process of dissociation by the expression $Q_A = \Delta H/4$. If account be taken of the formation of lower Zr iodides on the surface of the F, the value of Q_A , it appears, is also dependent upon the vapor pressure of the ZrI_4 .

V.M.

1. Zirconium--Processing
2. Filaments (Incandescent lamp)--Temperature factors
3. Zirconium--Electrodeposition
4. Mathematics

Card 2/2

PA - 20

AUTHOR: YEVSTYUKHIN, A.I.
TITLE: EMEL'JANOV, V.S., GODIN, JU.G., EVSTJUCHIN, A.I.
PERIODICAL: Investigation of the Zirconium-Tantalum System.
 Atomnaja Energija, 1957, Vol 2, Nr 1, pp 42-47 (U.S.S.R.)
 Received: 3 / 1957 Reviewed: 3 / 1957

ABSTRACT:

This system was investigated by methods of metallography, thermal analysis, electric resistance, hardness, and the X-ray-phase analysis, and the state diagram was constructed. The difficulties in producing zirconium-tantalum alloys were adjusted by smelting the corresponding samples in the electric arc oven MIFI-SH-3 with a coolable copper crucible. The samples were smelted in a pure argon atmosphere. The production of the samples from primary materials is described. The cast samples were homogenized by annealing at 1200°, then ground and dry-polished. Samples of non-annealed powder (which was taken from cast- and chilled alloys of different composition) were subjected to an X-ray phase analysis. The thermograms were recorded only up to 1000° by means of the recording KURNAKOV pyrometer. Determination of the solidus- and liquidus lines is then discussed. Results of the investigation: The investigation of the microscopic structure of the cast samples proved the existence of a considerable domain of solid solutions of tantalum in zirconium, as well as of an eutecticum and of a domain of solid solutions

Card 1/2

ASSOCIATION
 PRESENTED
 SUBMITTED:
 AVAILABLE:
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APPROVED FOR RELEASE: 09/17/2001
 Congress

CIA-RDP86-00513R001963020

In order to
 electric resistances of
 which were cast at 1200° and
 y, also the hardness of the afore-
 mured. Hardness increases if tantalum

YEVSTYUKHIN, A.I.

YEMEL'YANOV, V.S.; GODIN, Yu.G.; YEVSTYUKHIN, A.I.

The zirconium corner in the Zr-Ta-Nb constitution diagram. Atom.energ.
4 no.2:161-163 F '58. (MIRA 11:4)
(Zirconium-tantalum-niobium alloys)
(Phase rule and equilibrium)

Yevs Tyukhtin, A. I.

007/213

PART I. BOOK REVIEWS

2nd.

1)

International Conference on the Peaceful Uses of Atomic Energy. 2nd. Geneva, 1958

Radlyi, György (ed.). *Polonium-210 and its Application in Isotopes* (Reports of the Soviet Institute for the Production and Application of Isotopes) Moscow, Atomizdat, 1959. 500 p. (Series: *Radlyi*, vol. 6) 8,000 copies printed.

Eds. (Title page): G.V. Kargin, Academician, and I.I. Morozov, Corresponding Member, USSR Academy of Sciences; Ed. (Inside book): Eds. Andreyenko, Kozlov, and G.D. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicists, and chemists concerned in the production and application of atomic energy to peaceful uses; for physicists and chemists and for the students of higher technical schools where nuclear science and technology.

CONTENTS: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 19, 1958. Volume 6 contains 24 reports on: 1) various methods for the production of stable radioisotopes and their labeled compounds; 2) research results obtained in the field of isotopes in the field of chemistry, metallurgy, medicine, with the aid of isotopes in the field of biology of medical radiations; 3) the use of isotopes in the field of agriculture; 4) the use of isotopes in the field of medicine; 5) the use of isotopes in the field of geology; 6) the use of isotopes in the field of physics; 7) the use of isotopes in the field of biology; 8) the use of isotopes in the field of medicine; 9) the use of isotopes in the field of geology; 10) the use of isotopes in the field of physics; 11) the use of isotopes in the field of biology; 12) the use of isotopes in the field of medicine; 13) the use of isotopes in the field of geology; 14) the use of isotopes in the field of physics; 15) the use of isotopes in the field of biology; 16) the use of isotopes in the field of medicine; 17) the use of isotopes in the field of geology; 18) the use of isotopes in the field of physics; 19) the use of isotopes in the field of biology; 20) the use of isotopes in the field of medicine; 21) the use of isotopes in the field of geology; 22) the use of isotopes in the field of physics; 23) the use of isotopes in the field of biology; 24) the use of isotopes in the field of medicine.

1) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

2) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

3) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

4) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

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43) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

44) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

45) Kargin, G.V., and V.B. Dedov. *Peace of Developing Isotope Control Methods*

S/081/61/000/021/045/094
B10/B101

AUTHORS: Yevstyukhin, A. I., Yemel'yanov, V. S., Leont'yev, G. A.

TITLE: Investigation of the process of obtaining thorium by electrolysis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 296 - 297, abstract 21K158 (Sb. "Metallurgiya i. metalloved. chist. metallov." M., no. 1, 1959, 7 - 35)

TEXT: By the electrolysis of the melt $\text{NaCl} + \text{KCl} + \text{ThF}_4$ it is possible to obtain high-purity thorium and to reduce the content of impurities of the rare-earth elements by 60 to 80 times in comparison with the content in the original ThF_4 . By electrolyzing the melts with a solid cathode the crystals of the deposit are less contaminated by impurities than a deposit on a liquid cathode. The crystals are bigger than the crystals of the metal obtained by chemical methods. However, the deposit is never dense, which is connected with the considerable loss of the electrolyte included in the cathodic deposit. Consequently, the experiments were conducted in

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B150/B101

Investigation of the process of obtaining ...

a bath with an auto-compressing cathodic deposit, allowing considerable reduction of the content of the electrolyte in the deposit. At the beginning of the electrolysis, the melt contained (in % by weight): Th 12.5, Na 16.1, K 22.6, Cl. 44.7, F 3.8. The change in the composition of the electrolyte in the electrolysis was studied by chemical, thermal, and X-ray methods. As the electrolysis proceeds there is a continuous variation of composition of the electrolyte - an accumulation of fluorine in the form of NaF and KF. The ThF_4 added forms complexes of the type NaKThF_6 , $\text{Na}[\text{ThF}_5]$, Na_2ThF_6 , $\text{K}[\text{ThF}_5]$, $\text{K}_2[\text{ThF}_6]$. With the usual construction of cathode the deposit contains up to 75% of electrolyte. The metal yield is 30%. With auto-compressing cathodes the content of electrolyte falls to 50% and the metal yield increases to 75%. At a high content of Th in the electrolyte, the current yield increases, but at the same time the losses of Th increase owing to the removal of the electrolyte. The optimum concentration of Th in the electrolyte is 40 - 43 % by weight. With this, the current yield is 50 - 56%, and the content of coarsely disperse powder of Th is 2 - 2.3 times greater than the content of the "sludges" (finely disperse powder). The optimum volume concentration of

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Investigation of the process of obtaining ...

current is 50 - 70 a per kg of electrolyte ($D_c = 3 - 4 \text{ a/cm}^2$). At 680

to 700°C, the yield of metal reaches its maximum; with an increase of temperature the content of the finely disperse fraction increases. The reduction of D_c has a similar effect. Thermodynamic calculations show

that the discharge of Na^+ or K^+ ions with subsequent reduction of thorium fluoride by the alkali metal is the initial process in the electrolysis of the $\text{KCl} + \text{NaCl} + \text{ThF}_4$ melt. $\text{ThF}_4 + 4\text{NaCl}(\text{KCl}) \rightarrow \text{Th} + 4\text{NaF}(\text{KF}) + 2\text{Cl}_2$.

In proportion with the accumulation of fluorides of the alkali metals Th is bound in the complex, and for its deposition on the cathode a considerable increase is necessary in the concentration of Th in the electrolyte, up to 42 - 43 % by weight. The anodic process with an increase of fluorine content consists in the formation of CF_4 :

$\text{NaK}[\text{ThF}_6] + \text{C} \rightarrow \text{Th} + \text{NaF} + \text{KF} + \text{CF}_4$. Mean composition of the electrolytic Th (in % by weight): Th 99.5, Fe 0.005, rare earths 0.0006, Na 0.01, K 0.01, F 0.2, N 0.01, C 0.025, O 0.22. [Abstracter's note: Complete translation.]

Card 3/3

S/081/61/000/021/044/094
B150/B101

AUTHORS: Yevstyukhin, A. I., Leont'yev, G. A.

TITLE: The construction of an electrolyzer with auto-compressing cathodes for the electrolysis of fused thorium salts

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 296, abstract 21K157 (Sb. "Metallurgiya i metalloved. chist. metallov", M., no. I., 1959, 36 - 43)

TEXT: When depositing metal on a cathode in the form of loosely adhering crystals, as, for example, when obtaining rare and refractory metals by the electrolysis of fusions, it is convenient to produce the condensation of the cathodic deposit without interrupting the process. The construction described permits the uninterrupted or periodic condensation of the loose cathodic deposit. A drawing and a photograph of the apparatus with 300 a are shown. Automatic compression of the deposit is effected by compression of the auxiliary cathode to the principal cathode. The cathodes are turned in opposite directions. The intensity of compression does not vary with increasing thickness of the deposit on the principal cathode. The apparatus was tested on a fusion of $KCl + NaCl + ThF_4$ with external heating of the

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The construction of an electrolyzer ...

bath. Uninterrupted compression of the deposit allowed metal to be deposited on the cathode with constant D_0 and permitted an increase in the activity of the metal in the deposit and increased the general yield of the metal from 25 to 75%. The construction described can be used only if the depositing dendritic crystals are plastic, as, for instance, the crystals of thorium. [Abstracter's note: Complete translation.]

Card 2/2

S/081/62/000/004/011/087
B149/B101

AUTHORS: Yemel'yanov, V. S., Yevstyukhin, A. I., Abanin, D. D.,
Statsenko, V. I.

10

TITLE: An improved method for the preparation of chromium by
iodination and its properties

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 94, abstract
4V8 (Sb. "Metallurgiya i metalloved. chist. metalloy".
no. I. M., 1959, 44-62)

15

TEXT: A laboratory unit for the refining of chromium through its iodide
has been developed; the ideal conditions and a diagram of the process have
been determined. A comparative study has been carried out on the
mechanical properties of the prepared chromium and of chromium remelted in
an arc. The single crystals and the chromium remelted in an arc had a
cubic body centered lattice with the parameter 2.8790 ± 0.001 at room
temperature. [Abstracter's note: Complete translation.]

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30659

8/137/61/000/010/009/p56

A006/A101

5,2200 1087 1454/1521

AUTHORS: Yemel'yanov, V. S., Bystrov, P. D., Yevstyukhin, A. I.,

TITLE: Production of plastic hafnium by the iodide method

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 10, 1961, 20, abstract 103153
(V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 63 - 69)

TEXT: The authors studied the dependence of Hf precipitation rate on the temperature of the initial metal, the pressure in the retort, and the temperature of the filament. Hf precipitation was performed in a cylindrical Mo-glass retort of 18 - 20 cm length and 8 cm in diameter. The initial tungsten-filament of 0.05 mm in diameter and 8 cm length, was heated by a-c. The retort was heated in an electric resistance furnace. In all the experiments Hf rods were used as initial metal. The Hf was fourfold refined by the iodide method; the rods were about 2 mm in diameter and weighed 35 g. The iodine was introduced in the form of HfI in an amount of 1.5 g. The temperature of the filament was 1,350°C; the initial temperature of the retort was 355°C and attained 370 - 375°C at the end of the experiment. The experiments showed that the maximum rate of Hf precipitation

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Production of plastic hafnium by the iodide method

on the filament was attained at 230°C . The temperature of the raw metal affects the precipitation rate less than the pressure in the retort. The dependence of the Hf precipitation rate on temperature was investigated at 360°C in the retort and 230°C temperature of the ampoule with I_2 . The rate of Hf precipitation increases under these conditions, but is considerably less than that of Zr precipitation.

30659
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A006/A101

G. Svodtseva

[Abstracter's note: Complete translation]

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31732

S/081/61/000/021/042/094
B149/B101

18.3100

AUTHOR: Yevstyukhin, A. I., Barinov, I. P., Abanin, D. D.

TITLE: Investigation of the iodide process for the preparation of zirconium using zirconium carbide as starting material

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 280 abstract 21K4 (Sb. "Metallurgiya i metalloved. chist. metallov", M., no. 1, 1959, 78 - 83)

TEXT: The temperature conditions for obtaining ZrI_4 directly from ZrC were investigated. When 0.5 g ZrC (85% Zr, 15% total C) was heated for 15 hours at 780-800°C with 2.5 g I_2 in a quartz ampoule, the yield of ZrI_4 was 97% and the I:Zr ratio was 3.94:1. A quartz apparatus was devised for larger-scale preparation of ZrI_4 from ZrC at 800°C, designed to obtain 50 g carbide per cycle (duration of cycle ≤ 2 hrs). The feasibility of obtaining pure metallic Zr from the product of carbide conversion into ZrI_4 has been verified. Abstracter's note: Complete translation
Card 1/1

S/137/61/000/010/013/056
A006/A101

AUTHORS: Yevstyukhin, A. I., Bakakina, A. A.

TITLE: On a method of recovering zirconium and iodine in iodide refining process

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1961, 21, abstract 104165 (V sb. "Metallurgiya i metalloved, chist, metallov", no. 1, Moscow, 1959, 84 - 90)

TEXT: It was experimentally confirmed that I_2 can be fully recovered during the process of iodide Zr refining, excepted small mechanical losses during the unloading of the devices and processing of the wash water. The chemical department of the iodide Zr refining shop must therefore be equipped with the following basic units: reactors for washing Zr chips after its discharge from the apparatus; filters to separate the wash water from Zr chips, collectors of wash water, reactors for Zr hydroxide precipitation from the wash water with alkali or ammonia, filters or centrifuges to filter and wash the hydroxide; apparatus for iodide decomposition and I_2 sublimation, furnaces to roast the hydroxide, drying cabinets.

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On a method of recovering...

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A096/A101

for recovered chips and I₂ sublimation apparatus for its removal.

G. Svodtseva ✓

[Abstracter's note: Complete translation]

Card 2/2

30657
S/137/61/000/010/002/056
A006/A101

18 3100 1087.1454.1521

AUTHOR: Yevstyukhin, A. I.

SUBJECT: Investigating the process of magnesium-thermal reduction of BeF_2

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1961, 14, abstract 10A76.
(V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 91 - 105).

TEXT: The author studied the state of Be metallurgy and the advantages and deficiencies of the magnesium-thermal process of obtaining Be. The reaction of BeF_2 reduction with magnesium was thermodynamically calculated, and the mechanism of the reduction process was analyzed in connection with phase transformations of the initial charge. The phase diagram of the $\text{BeF}_2\text{-MgF}_2$ system was experimentally investigated. The effect of the slag type on the mechanism and kinetics of the reduction reaction of BeF_2 with magnesium was discussed. The experimental checking of flux-forming materials for the magnesium-thermal reduction of BeF_2 has shown that only fluorides of some alkali-earth metals meet the necessary requirements for flux forming admixtures. These compounds form stable complexes with BeF_2 which are not reduced with Mg. BeF_2 is proposed as a flux forming ad-

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A006/A101

Investigating the process of...

mixture. The experiments on the reduction of BeF_2 with Mg in the presence of BeF_2 yielded Be, approaching theoretical values, and the reaction proceeded smoothly without explosions at 900 - 1,000°C.

N. Platenova

[Abstracter's note: Complete translation]

Card. 2/2

S/137/61/000/012/037/149
A006/A101

AUTHORS: Yevstyukhin, A.I., Leont'yev, G.A., Nikishanov, V.V.

TITLE: Arc melting of refractory metals and alloys under laboratory conditions

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 19, abstract 120137 (V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 106 - 121)

TEXT: The authors describe the design of a laboratory arc-melting furnace, suitable for remelting Zr and the production of its alloys. In this furnace it is possible to perform melting with both consumable and non-consumable electrodes, on a-c or d-c (the latter is preferable because of the arc stability in this case). An inspection of the mechanical properties of Zr and Cr specimens produced showed very slight contamination of the metal during melting (up to 0.01% W and 0.0% Cu). The furnace is equipped with a hermetic melting chamber with a water-cooled Cu-crucible. A power connection with a non-consumable tungsten electrode is top supplied to the chamber; its motion does not disturb the hermeticity of the chamber. The crucible has exchangeable bottoms to obtain different

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A006/A101

Arc melting of refractory metals ...

shapes of castings. Cooling of the chamber conductor and crucible is regulated. The displacement of remelted metal during melting with a non-consumable electrode is carried out with the aid of manipulators. The arc ignition is performed with the aid of a spark generator. A table is presented showing the duration of melting depending on the weight and shape of the specimen; the order of the melting process is described; means of absorbing the gases, liberating inside the chamber, are analyzed. ✓

L. Povedskaya

[Abstracter's note: Complete translation]

Card 2/2

YEVSTYUKHIN, A.I.; LEONT'YEV, G.A.; BORKOV, N.V.

Design and performance of MIFI-9-2 high temperature furnaces
with graphite heaters for melting and casting in the vacuum of
pure metals and alloys. Met. i metalloved. chist. met. no. 1:122-127
'59. (MIRA 12:10)

(Vacuum metallurgy--Equipment and supplies)

31219

S/123/61/000/020/007/035

A004/A101

18.1272

AUTHORS: Yemel'yanov, V. S., Godin, Yu. G., Yevstyukhin, A. I.

TITLE: Mechanical properties of binary and ternary zirconium alloys with tantalum and niobium at room and high temperatures

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 20, 1961, 16, abstract 20A118 (V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 128-143)

TEXT: The authors investigated the hardness and strength of cast and hardened Zr-alloys with Ta (0 - 100%) and Nb (0 - 20%) and also ternary alloys containing up to 18% Ta and Nb. The hardness (HR) was measured in an argon atmosphere. It was found that a maximum appeared on the composition - hardness and composition - strength curves which can be explained by the transformation of the β -phase into the α -phase. Alloying zirconium with Ta and Nb increases the strength and hardness at room and high temperatures. Up to 10% Nb strengthens Zr to a greater degree than the addition of Ta.

[Abstracter's note: Complete translation]

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KOROBKOV, I.I.; IGNAT'YEV, D.V.; YEVSTYUKHIN, A.I.; YEMEL'YANOV, V.S.

Electronographic and kinetic study of the oxidation process
of zirconium and some zirconium-base alloys. Met. i metalloved.
chist. met. no. 1:144-161 '59. (MIRA 12:10)
(Zirconium--Metallography) (Electron Microscopy)

YEMEL'YANOV, V.S.; YEVSTYUKHIN, A.I.; CODIN, Yu.G.; RUSAKOV, A.A.

[Constitutional diagram of the system zirconium -
beryllium] Diagramma sostoiianiia sistemy tsirkonii-
berillii. Moskva, Glav. upr. po ispol'zovaniu atomnoi
energii, 1960. 14 p. (MIRA 17:1)
(Zirconium-beryllium alloys—Metallography)
(Phase rule and equilibrium)

28058 S/137/61/000/004/004/039
A056/A101

18 3100
AUTHORS:

Yemel'yanov, V. S., Yevstyukhin, A. I., Abanin, D. D.

TITLE:

Iodide method of thorium refining

PERIODICAL:

Referativnyy zhurnal, Metallurgiya, no. 4, 1961, 33-34, abstract
4G269 (V sb. "Metallurgiya i metallovedeniye chistykh metallov
no. 2 M., Atomizdat, 1960, 5-13)

TEXT:

The initial material used for the refining was a powder of electrolytic Th of composition (in%): Th 99.5; O 0.22; F 0.20; Cl 0.002; N 0.025; C 0.030; Na 0.007; K 0.007; Fe 0.005; rare earths 0.0005. The precipitation process of Th on the wire was executed in a cylindrical flask of Mo-glass, 80 mm in diameter and 400 mm in length. The length of the incandescent wire was 600 - 700 mm. The flask was placed in a cylindrical furnace, heated to 400 - 450°C, and prepared for the refining process. To this purpose, the flask was heated in the furnace to 400°C. In the course of heating, at about 220 - 260°C, a iodide of Th was formed (ThI₄). At 400°C, the current was supplied to the heated wire. The temperature of the incandescent wire on which Th deposited was maintained at 1,200 - 1,300°C. The building up of the wire ended with an increase

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A056/A101

Iodide method of thorium refining

of I-up to 50 - 70 amp. For the experiments, the flask was charged with 50 to 200 g of Th and 5 to 8 g of I_2 . The thickness of the rods obtained in different experiments was 3.5 - 4 mm, weight 30 - 60 g. The composition (in %) of the non-molten ThI_4 rods was: Th 99.97; O < 0.01; N < 0.01; F < 0.01; C < 0.005; rare earths 0.0001.

G. S.

[Abstracter's note: Complete translation]

Card 2/2

YEMSL'YANOV, V.S.; YEVSTYUKHIN, A.I.; ABANIN, D.D.; STATSENKO, V.I.

Iodide method of refining chromium. Met. i metalloved. chist.
no. 2:14-26 '60. (MIRA 13:12)
(Chromium--Metallurgy) (Iodides)

YEMEL'YANOV, V.S.; YEVSTUKHIN, A.I.; LEONT'YEV, G.A.

Niobium iodide and some of its properties. Met. i metalloved.
chist. met. no. 2:27-48 '60. (MIRA 13:12)
(Niobium iodide)

YEVSTUKHIN, A.I.; BARINOV, I.P.

Equipment for measuring the vapor elasticity of zirconium and
hafnium chlorides and iodides. Met. i metalloved. chist. met.
no. 2:49-57 '60. (MIRA 13:12)
(Zirconium--Metallurgy) (Hafnium--Metallurgy)
(Vapor pressure)

18.1215
18.9200

28306
S/081/61/000/016/012/040
B118/B101

AUTHORS:

Yemel'yanov, V. S., Godin, Yu. G., Yevstyukhin, A. I.

TITLE:

Preliminary investigation of the melts of the system
zirconium - aluminum - beryllium

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 16, 1961, 53,
abstract 165365 (Sb. "Metallurgiya i metallovedeniye chistykh
metallov". M., Atomizdat, no. 2, 1960, 58 - 77)

TEXT: Six sections of the system Zr - Al - Be were examined by the
methods of thermal, metallographic, and X-ray analysis, and also by deter-
mination of the hardness. The samples were obtained by fusion in an arc
furnace with a wear-resistant W electrode and a water-cooled copper
crucible. Six hypothetical constitution diagrams were plotted on the
basis of the data obtained. Three ternary compounds formed by peritectic
reactions were found in the system $ZrBe_9 - Zr_4Al_3$: $4ZrBe_9 \cdot Zr_4Al_3$ ($1380^\circ C$),
 $ZrBe_9 \cdot Zr_4Al_3$ ($1330^\circ C$), and $ZrBe_9 \cdot 9Zr_4Al$ ($1270^\circ C$). Zr_4Al_3 is soluble in
 $ZrBe_9$. The system $ZrBe_9 - ZrAl_2$ gives a diagram of the eutectic type X

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Preliminary investigation of the...

(the eutectic $L \rightleftharpoons \text{ZrBe}_9 + \text{ZrBe}_9 \cdot 9\text{ZrAl}_2$ at 1445°C and $\sim 75\% \text{ZrAl}_2$). $\text{ZrBe}_9 \cdot 9\text{ZrAl}_2$ is formed by a peritectic reaction at 1465°C . Three ternary compounds were also found in the system $\text{ZrBe}_2 - \text{ZrAl}_2$: $\text{ZrBe}_2 \cdot 3\text{ZrAl}_2$ which is formed by a peritectic reaction (1415°C), $3\text{ZrBe}_2 \cdot \text{ZrAl}_2$ formed by a peritectic reaction (1340°C), and $4\text{ZrBe}_2 \cdot \text{ZrAl}_2$ formed by the peritectoid conversion $\text{ZrBe}_2 + 3\text{ZrBe}_2 \cdot \text{ZrAl}_2$ (1100°C). ZrAl_2 is soluble in ZrBe_2 , and ZrBe_2 in ZrAl_2 . Two intermediate phases are formed in the system $\text{ZrBe}_{13} - \text{ZrAl}_3$ due to peritectic reactions: $2\text{ZrBe}_{13} \cdot \text{ZrAl}_3 \rightleftharpoons L$ + $\text{ZrBe}_{13} \cdot 13\text{ZrAl}_3$ (1190°C) and $\text{ZrBe}_{13} \cdot 13\text{ZrAl}_3 \rightleftharpoons L + \text{ZrAl}_3$ (1250°C). ZrAl_3 is soluble in ZrBe_{13} . The system $\text{ZrBe}_{13} - \text{Al}$ gives a diagram of the eutectic type (eutectic at 635°C) with a limited solubility of Al in ZrBe_{13} . Three compounds formed by peritectic reactions were found in the system $\text{ZrAl}_3 - \text{Be}$: ZrBeAl_3 , ZrBe_7Al_3 , $\text{ZrBe}_{19}\text{Al}_3$, and the easily fusible eutectic $\text{ZrAl}_3\text{Be}_{19} + \text{ZrAl}_3\text{Be}_7$ ($\sim 35\% \text{Be}$ and 635°C). [Abstracter's note: X]

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Preliminary investigation of the...
Complete translation.]

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B118/B101

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24598

S/137/61/000/005/055/060
A006/A106

18. 1272

AUTHORS: Korobkov, I. I., and Yevstyukhin, A. I.

TITLE: The effect of alloying on the protective properties and critical thickness of an oxide film on zirconium

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 5, 1961, 56, abstract 51420
(V sb. "Metallurgiya i metallovedeniye chistykh metallov", no. 2, Moscow, Atomizdat, 1960, 93-107)

TEXT: The authors carried out an electronographical and kinetic investigation of oxidizing processes of Zr-base alloys in air at 300 - 700°C. All the Zr-alloys oxidize more quickly than pure Zr. The thickness of the critical oxide film depends on the alloy composition and the oxidizing temperature. The higher the temperature, the smaller the critical thickness of the oxide film in all Zr alloys. An increase of the alloying admixture caused both a decrease (when adding Sn) and an increase of the critical thickness of the oxide film (when adding Ti). Zr alloys alloyed with Ti and Al are low-resistant against oxidation, since Ti^{2+} and Al^{3+} dissolve in cubic ZrO_2 . There are 7 references.
Ye. L.

[Abstracter's note: Complete translation]

Card 1/1

DASHKOVSKIY, A.I.; YEVSTYUKHIN, A.I.; SAVITSEIY, Ye.M.

Equipment for the measurement of internal friction in metals
and alloys. Met. i metalloved. chist. met. no. 2:207-213
'60. (MIRA 13:12)

(Internal friction--Measurement)
(Measuring instruments)

DASHKOVSKIY, A.I.; YEVSTYUKHIN, A.I.; SAVITSKIY, Ye.M.; SKOROV, D.M.

Temperature relation of internal friction and the shear modulus
of uranium. Met. i metalloved. chist. met. no. 2:224-228 '60.
(Uranium--Thermal properties) (MIRA 13:12)
(Internal friction)

GRUZIN, P.L.; YEVSTYUKHIN, A.I.; ZEMSKIY, S.V.; NIKISHANOV, V.V.

Investigating the redistribution of sulfur during the zonal
melting of chromium in arc furnaces. Met. i metalloved.
chist. met. no. 2:276-279 '60. (MIRA 13:12)
(Chromium--Metallography) (Sulfur--Isotopes)

82282

S/089/60/009/01/05/011
B014/B070

18.8200

AUTHORS:

Dashkovskiy, A. I., Yevstyukhin, A. I., Savitskiy, Ye. M.,
Skorov, D. M.

TITLE:

Internal Friction of Uranium A

PERIODICAL:

Atomnaya energiya, 1960, Vol. 9, No. 1, pp. 27 - 32

TEXT: The internal friction and, thus, the modulus of rigidity of uranium as dependent on temperature was measured by means of a relaxator which recorded the damping of the free torsional oscillations of a sample. A uranium wire of a length of 320 mm (diameter 0.98 mm) and a purity of 99.9% was used as a sample. The frequency of oscillations of the wire in a vacuum of $5 \cdot 10^{-5}$ torr was ~ 2 /sec. The rate of heating or cooling varied in the range $5 - 0.5^\circ\text{C}/\text{min}$. The accuracy of temperature measurement was $\pm 1.5^\circ\text{C}$. According to the three phases of uranium, the samples were annealed at 630, 645, 670, 720, 755, 768, 850, and 960°C . The course of the measured parameters is represented for the various temperatures in Figs. 1-5. The results of measurement lead to the

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Internal Friction of Uranium

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B014/B070

following conclusions: (1) The bend in the internal friction curve in the temperature range 450 - 500°C is caused by the tenacity of the grain boundaries. This tenacity disappears after annealing in the β - and γ -phases. This is the result of the recrystallization of phases due to lower mobility of the boundaries. (2) In temperature changes, the polymorphous transformations of uranium are accompanied by an isothermal change in internal friction. The changes take place during heating as well as during cooling in both directions. (3) The most plastic γ -domain, which has a body-centered cubic lattice, is characterized by a high internal friction. The tetragonal β -modification which tends to brittleness, has the lowest internal friction. It is generally true that the internal friction is related directly to the crystal lattice and to its capability of plastic deformation. There are 5 figures and 13 references: 10 Soviet, 2 American, and 1 French. ✓

SUBMITTED: October 3, 1959

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82283

S/089/60/009/01/06/011
B014/B070

18.9200

AUTHORS:

Yemel'yanov, V. S., Godin, Yu. G., Yevstyukhin, A. I.,
Rusakov, A. A.

TITLE:

State Diagram of the Zirconium - Beryllium System

PERIODICAL:

Atomnaya energiya, 1960, Vol. 9, No. 1, pp. 33-38

TEXT: As starting material for different alloys, zirconium iodide (purity 99.7% by weight) and distilled beryllium (purity 99.4% by weight) were used. The cast and annealed samples were investigated metallographically. The annealing temperature lay between 750°C and 1200°C and the annealing time between 250 and 35 hours. The samples were analyzed thermally in vacuum at a heating or cooling rate of 5 - 7°C per minute. For alloys containing 2.9, 5.04, and 8.9 per cent by weight of beryllium, critical points were determined. X-ray analyses (quantitative phase analysis) were made by photographic as well as ionization methods. The apparatus PKY-86 (RKU-86) and YPC-50M (URS-50I) were used depending on the method. The microhardness was measured according to Rockwell by

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State Diagram of the Zirconium - Beryllium System

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B014/B070 82283

means of a diamond cone with a load of 15 kg. In the zirconium - beryllium system there are four intermediate phases: $ZrBe_2$, $ZrBe_6$, $ZrBe_9$, and $ZrBe_{12}$. The first three originate from peritectic reactions at $1235^\circ C$, $1475^\circ C$, and $1555^\circ C$. The last phase originates with an open maximum at $1645^\circ C$. At $965^\circ C$ and a beryllium content of 5% there results an eutectic between $ZrBe_2$ and zirconium. An addition of beryllium to zirconium lowers the temperature of $\alpha \rightarrow \beta$ transformation and leads to an eutectic at $800^\circ C$. The solubility of beryllium in α -zirconium is less than 0.1% by weight and in β -zirconium less than 0.3% by weight. The solubility of zirconium in beryllium does not exceed 0.3% by weight. There are 8 figures, 1 table, and 5 non-Soviet references. ✓

SUBMITTED: February 3, 1960

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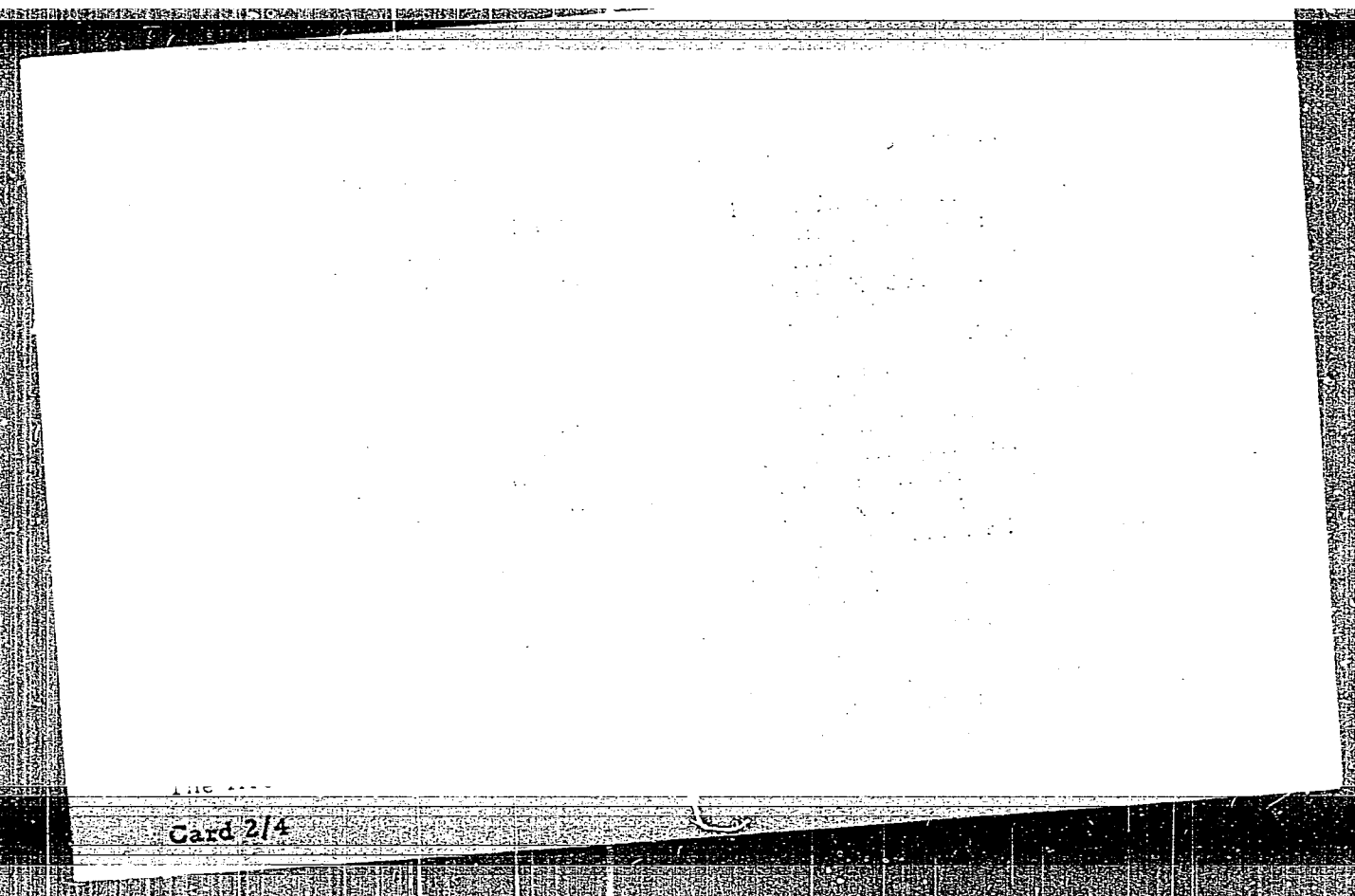
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...of the components in the liquid state -
...NaCl is formed by a peritectic reaction

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Investigation of the oxidation kinetics of iodide ...

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